Will Consumers Pay a Premium for Clone-free labeled Meat products? Evidence from the 2009 Sunbelt Agricultural Exposition

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Abstract:
This paper examines consumer willingness to pay (WTP) for clone-free meat labels. Data were collected at the Sunbelt Agricultural Exposition (Ag Expo) in Moultrie, Georgia using a consumer survey instrument. Survey results show that majority (59.45%) of the respondents said they were willing to pay for clone-free labels. Results suggest that bid amount, gender and education are factors that influence WTP for clone-free labels.

Introduction

Labeling of cloned animal meat and milk remains a controversial issue. To our knowledge, no research has been done on whether consumers will be willing to pay for certified clone-free labeling, since the U.S. Food and Drug Administration (FDA) announced in January 2008 it will not mandate the use of labels (http://www.fda.govcvm/cloning.htm). Although other forms of reproduction (assisted reproductive) techniques have been used in animal breeding for years, animal cloning has become the most controversial. The controversy may have emanated from the cloning of "Dolly" the sheep. Animal cloning is a process by which scientists can copy the genetic or inherited traits of an animal. The proponents of cloning argue that it enables them to more quickly breed desirable traits into their herds and the potential benefits include lower prices and higher meat quality. Many consumers, however, appear not to be aware of the technology or find the technology unethical (Lusk, 2008).

Studies done before the FDA's decision not to mandate the labeling of cloned meat were concerned more about consumer acceptance of cloning (Sosin and Richards, 2005; Storey, 2006). Sosin and Richards (2005) found in their survey that 64% of the respondents believed cloning will be used sometime in the future. In a 2006 study, the Mellman Group (2006) found that about 65% of the respondents had heard about animal cloning. Additionally, the study found that 35 percent of consumers said they would never purchase meat from a cloned animal or their

offspring. The International Food Information Council (IFIC) (2006, 2007), however, found that consumers' willingness to purchase meat, milk, or eggs from the offspring of cloned animals increased from about 41% in 2006 to about 46% in 2007.

Research has shown that labeling can be used to attract price premiums (Teisl et al., 2002; Umberger, 2003; Louriero and Umberger, 2004; Mabiso, 2005; Onyango et al. 2006). Teisl et al. (2002) reported a positive WTP for seafood if certified by an independent third party. In their study, Louriero and Umberger (2004) showed that age and gender (female=1) significantly influenced WTP for food safety. Moreover, Mabiso (2005) found that 80% of consumers were willing to pay a premium of $0.48 on average, for apples with CoOL labels. Also, the study by Onyango et al (2006) suggests that there is a potential for labeled GM foods.

A recent study by Lusk (2008) focused on a mandatory labeling system for meat and milk from cloned animals. Using three different samples, the study found that, people were willing to pay up to 32% higher food prices to have a mandatory labeling policy on meat and milk from cloned animals and their offspring.

None of the studies, however, have investigated consumer willingness to pay for voluntarily labeled meat as clone-free. To fill this knowledge gap, this study examined consumer willingness to pay for clone-free labels. The objective of this paper was to determine, estimate and analyze the factors that influence consumers' willingness to pay a premium for clone-free labeled meat products. The following sections will discuss the empirical model, survey methods, results and conclusions.

Empirical Model

To estimate willingness to pay for a clone-free labeled meat, a logit choice model was applied to the 111 survey observations, coding the dependent variable as 1 if the respondent said

yes, and 0 if no. A simple linear specification of the utility index was used. The independent variables in the statistical Logit model included the bid value (Bid), age of the respondent (AGE), household income (INCOME), level of education (EDUCATION), and gender (FEMALE). The variables age, income, education and gender are all dummy variables and are defined in Table 1.

The specification of the model is:

$$\text{Prob(Yes)} = \beta_0 + \beta_1 \text{Bid} + \beta_2 \text{Age1} + \beta_3 \text{Inc1} + \beta_4 \text{Inc3} + \beta_5 \text{educ1} + \beta_6 \text{educ2} + \beta_7 \text{Kcdlab} + \varepsilon$$

Survey Methods

The data used in this study were collected at the Sunbelt Agricultural Exposition (Ag Expo), on October 21, 2009 in Moultrie, Georgia using a self-administered survey. Respondents were selected at random. The turn down rate was about 55%, as observed by those conducting the survey when they approached prospective respondents for participation**.** The survey was conducted by agricultural economics students at Fort valley State University.

Results

Of the 111 respondents who answered the question on WTP for a clone-free label, 66 (59.46%) were willing to pay and 45 (40.54%) were not willing to pay for a label.

A mean WTP was calculated using the coefficients of an equation without consumer characteristics (restricted). Table 2 shows a calculated mean of at 23.47cents (-(α/β)). This bid price is 45.59% over the average bid price for the label.

To analyze the impact of different factors on WTP, the full equation with consumer characteristics was estimated (Table 3). Marginal effects were then calculated to determine the effects of each variable on WTP. Results show that BID, EDUCATION1, and FEMALE were

statistically significant. Also, the variable KCDLAB had a positive and statistically significant influence on the WTP for a clone-free label. As shown in Table 3, the coefficient for BID has the expected negative sign. This implies that the higher the bid amount, the less the willingness to pay.

The marginal effects were calculated at the mean of the explanatory variable (last column in Table 3). Results show that females were 22% more likely to pay for a label than males. Also, respondents with less education were 33% more likely to pay more for meat labeled clone-free than those with higher education. Those individuals who said they were knowledgeable about cloning and also read labels were, however, 2% less likely to pay for clone-free labeled meat.

Conclusions

This paper examined consumer willingness to pay for clone-free meat labels. Based on a pilot survey, results suggest that consumer willingness to pay a premium for a clone-free label is influenced by the bid amount, educational level, gender and whether the respondent is both knowledgeable about cloning and also reads labels when shopping. The results suggest how pricing will be important if cloned meat had to be labeled. A higher premium will result in fewer consumers willing to pay for the label.

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Table 1. Description of Variables

Variable	**Description**	**Mean**	**STD**
WTP	1 if respondent is willing to pay for a label, 0 otherwise (not willing to pay a premium)	0.5945	0.4931
Bid	5 cents, 10 cents, 15 cents, 20cent and 20 cents	16.1261	6.7985
Income1	1 if respondent's annual household income is less than $40,000, 0 otherwise	0.1801	0.3860
Income3	1 if respondent's annual household income is $80,00 and above, 0 otherwise	0.3423	0.4766
Age1	1 if respondent's age is younger than 35 years of age, 0 otherwise	0.3513	0.4795
Education1	1 if respondent has at least high school diploma, 0 otherwise	0.1081	0.3119
Education2	1 if respondent has either an Associate/Technical degree or Some College education, 0 otherwise	0.234	0.4254
Female	1 the respondent's gender is female, 0 otherwise	0.4090	0.4931
Kcdlab	Knowledgeable about cloning and reads labels		

Table 2. Parameter Estimates for WTP Model without Consumer Characteristics

Mean Willingness To Pay	**Estimate**	**t-value**
Intercept (α)	1.2677	2.384
Bid***(β)	-0.05403	-1.818
Mean WTP (-(α/β))	23.4759	

***=0.01; **=0.05 and ***=0.10**

Table 3. Estimated Logit Coefficients and Marginal Effects of Explanatory Variables on Willingness to Pay

Variable	**Estimate**	**t-value**	**Change in Probability**
Intercept	1.3456	1.836	.3224
Bid***	-0.0545	-1.675	-.0130
Income1	0.8250	1.313	.1825
Income3	0.6671	1.341	.1549
Age1	-0.4885	-.961	-.1181
Education1**	1.8562	2.124	.3349
Education2	0.3788	.701	.0883
Female***	0.0937	1.679	.0224
Kcdlab***	-0.0872	-1.674	-.0209

***=0.01; **=0.05 and ***=0.10**

Predicted			
Actual	0	1	Total
0	21	24	45
1	12	54	66
Total	33	78	111
Prediction Success Rate			67.56%